EDGE SORTED CARDS
METHOD OF CODING, PUNCHING AND SORTING

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1. WHAT IT'S FOR AND WHAT IT IS

1.01 We sort a lot of things in the telephone business. We want things in order, telephone number order, chronological order, etc. Or we want to pull a particular record or records from a large file. If this information is written with no coding system, we spend a lot of time hunting. But there is a way to record this information to make the job easier.

1.02 It's called edge sorting. The information is put on special cards with holes around the edge. These holes are coded by notching away the card between the hole and the edge. Then you insert a needle in one of the holes of a group of cards. When you lift the needle the cards notched in that hole fall away from the stack since they have nothing to support them.

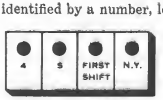
1.03 Simple? It sure is! And several manufacturers make the cards, punches and needles you need to do it.

1.04 Several of our BSP's refer to this method of sorting. And you may find it useful for some special application of your own. So this practice tells you how to code, punch, and sort edge sorted cards.

2. CODING

2.01 The holes around the edge of the card have special names —

(a) A "code position" is a single hole identified by a number, letter, word or abbreviation.



Note: All illustrations except those in Paragraphs 2.02 (b), 2.02 (c), 3.02, 4.03 (7), 4.03 (9) (a) 1st picture, 4.04 (7) 2nd picture and 4.04 (9) 1st picture are by the courtesy of the Royal McBee Corporation, with its permission.

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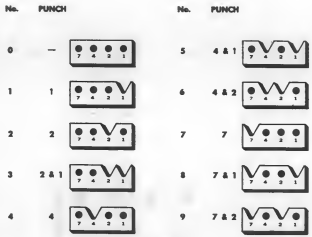
(b) A "code field" has one or more code positions relating to a single classification.

(c) A "code section" has one or more code fields relating to the same subject.

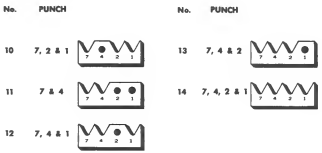
2.02 There are three types of coding —

(a) ***Direct*** — A specific classification is assigned to a hole. Cards can have single row or double row holes. Double row holes provide more space for coding but sometimes require an extra sorting operation.

(b) ***Numerical*** — Only four holes are used for each set of numbers from 0 through 14. These four holes are assigned values of 1, 2, 4 and 7. By punching 2, 1 or no holes any digit from 0 to 9 can be expressed.

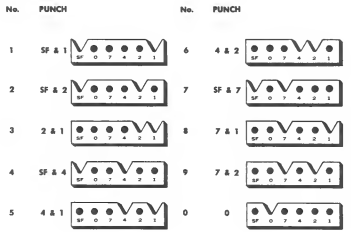


This coding can be expanded to 19 by adding one more code position in each code field — a 10. Then you can represent numbers from 10 to 19 by adding a 10 to the above coding. Or if you want to code up to 14 in one code field with only 4 positions, do it like this —



(c) ***Selective Coding*** — Selective coding is used to make selective sorting easier. Selective sorting is covered in Par. 5.06. There are four types of selective code —

(1) Single row selective — This code is like numerical, but the SF and 0 positions are added in each 7-4-2-1 code field. Punch the SF position and a 1,2,4 or 7 when you want to indicate a single figure (1,2,4,7). Punch only the 0 position for all zeros. Always punch two positions in each field except for a 0.

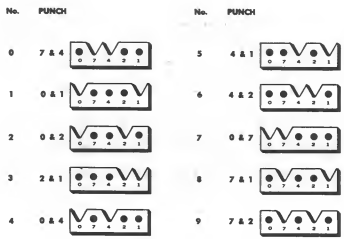


Illustrating Coding and Punching of Number 0804

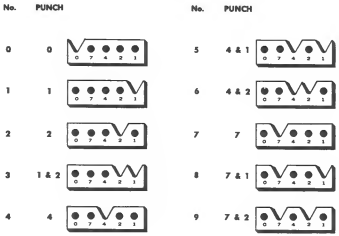
(2) Double row selective — Punch all single figures (figures that need only one punch, 1,2,4,7) in the inner row. Punch all combination figures (figures that need two punches, 3,5,6,8,9) in the outer row. Punch the number of zeros in the number in the zero code field ahead of the number code fields. Leave their position in the number series unpunched. For instance, for a number like 0804, punch 2 in the zero code field and leave the thousands and tens field unpunched.

Illustrating Coding and Punching of Number 0804

(3) Two out of Five Selective — Five holes are used for each set of numbers from 0 through 9. These holes are assigned values of 0,1,2,4 and 7. By always punching two positions any number from 0 to 9 can be expressed. All combinations are additive except 0 (7 and 4). This code takes one more position than the straight numerical code (1,2,4,7). But, 2 out of 5 is more efficient for selective sorting than four position numerical. By the way, if you try to sequence sort (Par. 5.03) this type of coding the 0,10,20,100, etc, will not fall in the proper place. The 0 will fall after the 9, the 10 after the 19 and so on.



(4) 0 Selective Numerical — This coding is the same as numerical coding for digits 1 through 9. But with numerical coding if you want to selective sort for the digit 0 you must eliminate 1,2,4 and 7 to get the 0's (Par. 5.06). So in this code a 0 is added to the 1,2,4 and 7 of numerical coding. When you want a 0, punch a 0. You can then selective sort for zero with one pass of the needle.



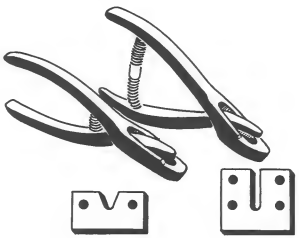
3. HOW TO PUNCH THE CARDS

3.01 There are several pieces of equipment you can use to punch the cards. You can use a hand punch — it's very much like a train conductor punch. Or for more volume there are several machines available. But we'll limit our explanation here to the hand punch. If your operation is such that you need these other machines, you should get an instruction manual with the machine.

3.02 There are two types of hand punches.

(a) Single row punch — It cuts a V-shaped notch and is used to punch the holes of a single row card.

(b) Double row punch — It cuts a U-shaped notch and is used to punch the holes of a double row card.



3.03 The mechanics of using the hand punch are simple —

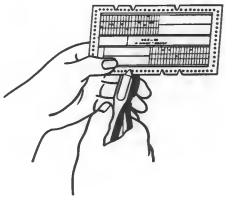
(a) Hold the card with the thumb and forefinger of the left hand, close to the hole you want to punch. Keep your fingers away from the hole to be punched.

(b) Hold the punch in the right hand and insert the card in the punch so the cutting blade is centered over the hole you want to punch.

(c) To steady the card and guide the punch, rest the punch on the last three fingers of your left hand. Again keep your fingers in the clear.

(d) Make sure the card rests squarely against the guide behind the cutting blade. This will insure a deep enough notch.

(e) Squeeze!



3.04 Now you're ready to punch a whole card. Here's the best way to do it — by the numbers.

1. Familiarize yourself with the layout of the card. Locate on the card the information and codes you want to punch.

2. Locate the related code sections or fields along the sides of the card.

   (When you're learning to punch you may want to mark the position to be punched with a colored pencil. It's OK to do this at first but after you're more experienced you'll probably find it won't be necessary.)

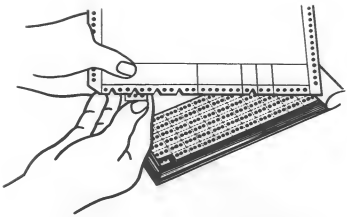
3. Turn the card upside down and begin punching at the lower right hand corner — that's right, you'll have to read upside down — but it's easy when you get the knack of it.

4. Punch the codes from right to left around the four sides of the card, turning the card counter-clockwise after each side has been punched.

3.05 If you're punching double row cards, use a double row punch for both rows. To punch codes in the outer row, center the cutting blade over only the outer hole. To punch codes in the inner row, center the cutting blade over the inner row hole. Punch the codes in both rows with just one handling of the card.

3.06 If you make a mistake and punch a card in the wrong place, or if you want to change a classification on an old card, you don't have to repunch the whole card. You can use card savers. Card savers are tabs with holes in them you can paste over the notch. Sheets of card savers are perforated into sections of three holes and bound in book form. You can order them for single or double row cards.

3.07 To use these card savers, tear one out and moisten the gummed side. Place half of it on the back of the card with the center hole of the card saver centered on the notch you want to correct. Fold the other half over the edge of the card and press down. Then you can repunch the card.

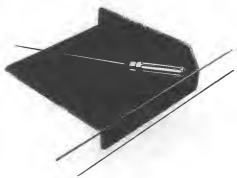


4. HOW TO SORT THE CARDS

4.01 There are two basic tools for sorting.

(a) The ***sorting needle*** is a steel needle set in a plastic handle. Some sorting needles have adjustable length needles.

(b) The ***alignment block*** makes sorting easier and faster. The drop front guide fits flush against the front edge of a desk. The vertical guide on the right is used to align the cards.



4.02 Here are several rules that apply to all sorting operations. Remember them —

(a) BE CAREFUL WITH THE SORTING NEEDLE — IT'S SHARP — Keep your left hand away from the point while sorting.

(b) Always use an alignment block — It is essential to speed and card control.

(c) Keep the sorting needle handle in the palm of your hand—Never touch the needle while sorting.

(d) Keep your wrist relaxed and flexible — Tenseness slows sorting and reduces card control.

(e) Keep your hands and fingers relaxed — Too tight a grip on the needle may tear the holes.

(f) Keep the needle parallel with the top of the desk. If tilted down the cards will fall off — If tilted up the cards will bind and not fall.

(g) The punching or sorting desk should be 26″ to 28″ from the floor.

(h) Don't get discouraged if at first you feel clumsy while sorting. Keep at it. It's easy when you get the knack of it.

4.03 The technique of sorting edge sorted cards is the same no matter what type of sorting you are doing. We'll cover the basic sorting technique now and cover the different types of sorting in Part 5. By the numbers again — to sort the longer side of the card.

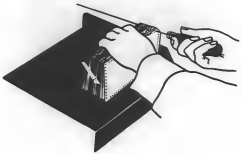
(1) Place a handful (about 1" or slightly larger) on the alignment block with the front of the cards facing you. Put the side you want to sort at the top.

(2) Hold the cards loosely with the left hand and jog them against the guide of the alignment block until they are aligned.

(3) Grasp the cards close to the position you want to sort.

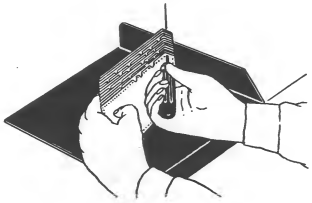
(4) Hold the handle of the sorting needle firmly with your right hand. Keep your fingers away from the needle.

(5) Insert the needle in the position you want to sort until the front card is about an inch from the handle. Be sure you don't have your finger (in back of the cards) over the position you want to sort.

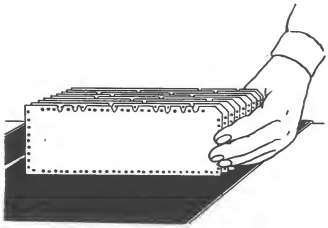


(6) Slide your left hand to the left side of the cards. Hold them lightly with only a slight pressure of your thumb and fingers against the cards.

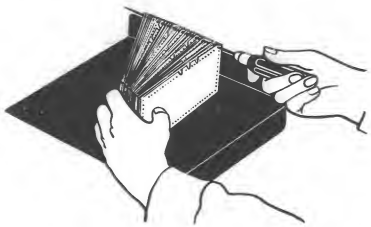
(7) Swing the handle of the sorting needle to the left and at the same time move the cards to the center of the alignment block. Continue holding the cards with your left hand. Exert pressure with your thumb in the lower left corner.



The inside of your fingers should be flush against the beveled edge of the cards.

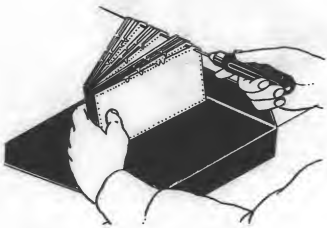


(8) Swing the handle of the sorting needle to the right until you feel a resistance. This causes the cards to spread out on the needle.



(9) There are two ways to handle the next step.

(a) If you're handling a large number of cards (2 or more inches) continue to hold the cards firmly. Raise both hands about two inches.

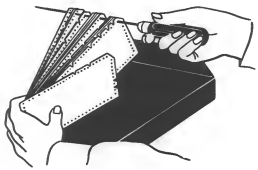


Strike the cards squarely on the alignment block. Release the pressure of the left hand as the cards strike the block. Raise the sorting needle slightly to separate the punched cards from those on the needle. Spread the fingers of your left hand to balance the cards that will fall. Go on to step 10.

(b) If you're handling a small number of cards (less than 2 inches) do it like this —

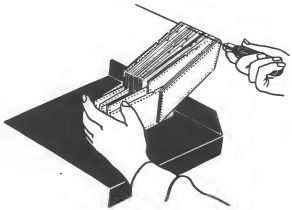
After step 8, release the pressure of your left hand. Spread your fingers to balance the cards that will fall. Go on to step 10.

(10) After 9(a) or 9(b) — Whack the cards several times against the guide of the alignment block, and at the same time raise the sorting needle away from the cards that are falling.



(11) If some of the cards stick and don't fall, whack them again to loosen them. Don't pull out the cards that are falling — Lift the cards on the needle away from them.

(12) Lift the sorting needle to the right and over the guide. Slide the cards that have fallen against the right guide of the alignment block.

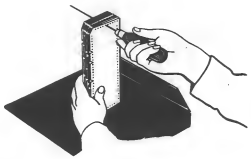


(13) What you do with the cards that fall depends on the type of sorting you're doing. More about that later.

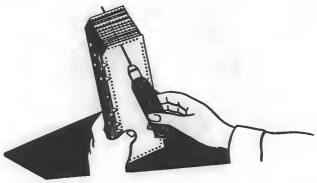
4.04 To sort the short side of the card the technique is slightly different. By the numbers —

(1) through (5) — Same as before. (At this point the needle is in the position you want to sort, with the cards about 1" from the handle.)

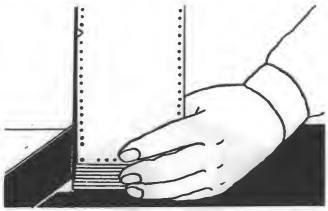
(6) Slide your left hand to the bottom of the cards. Hold them lightly with only a slight pressure of your thumb and fingers against the cards.



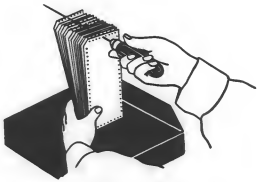
(7) Lower the handle of the sorting needle and at the same time raise the batch of cards off the alignment block. Let the front cards rest on the little finger of your left hand. Hold the cards with your left hand and exert pressure with your thumb in the lower left corner.



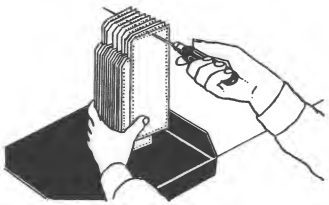
The inside of the other three fingers should be flush against the beveled edge of the cards.



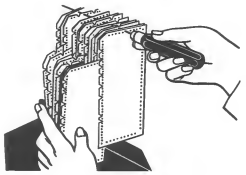
(8) Raise the handle of the sorting needle until it is parallel to the desk and you feel a resistance. This causes the cards to spread out on the needle.



(9) Release the pressure of the left hand. Tap the lower right corner of the cards several times on the alignment block. Shake them gently two or three times.

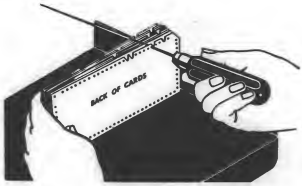


Lift the cards on the needle to the right and over the guide.



4.05 Every card has three square corners and one clipped corner. When the clipped corners of all cards are together, the codes are together. But the corners of a batch of cards may be mixed up. To line them up again (it's called corner sort), sort in the top right corner hole. Place the cards that drop in a stack. Sort two more corners the same way. The clipped corners of the cards that drop will be together. You can then reassemble the batch for further sorting.

4.06 When you sort in code positions to the left of center it is difficult to get leverage to fan the cards. These positions are easier to sort if you turn the backs of the cards to you.

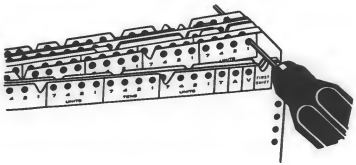


4.07 If you're left-handed you can probably learn to sort with the right hand. But if it is too difficult, a left-handed alignment block is available. The sorting technique for right-handed sorting should be altered to fit.

5. DIFFERENT TYPES OF SORTING

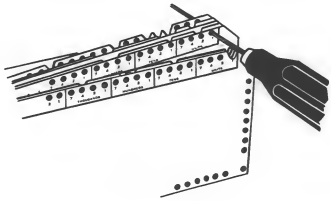
5.01 Up to now we've been talking about the mechanics of sorting edge sorted cards. Now we'll talk about uses you can make of this sorting procedure. You can pull particular cards from a stack. You can put the cards in sequence. You can pull all cards that have classifications in common. There are several types of sorting and we'll cover them one at a time.

5.02 ***Direct Sorting*** — To sort in direct code positions, insert the sorting needle in the proper hole and follow the basic sorting technique. For example, if you insert the needle in the "first shift" position, the cards punched in this position will fall.



5.03 ***Sequence Sorting*** — Use sequence sorting to arrange numerically coded cards in numerical sequence. Make 4 sorts in each 7-4-2-1 field. Always sort from right to left. Sort the 1 position of the units field first and place the cards that drop in back of those left on the needle.

(If you are sorting from the back of the cards for positions left of center, sort from left to right and place the cards that drop in front of those left on the needle.) Before you remove the needle, line up the cards and let the needle fall into the grooves of the cards in the rear. Sort the 2, then the 4 then the 7 position in the units field the same way you did the 1 position. Repeat this operation on the tens, hundreds, thousands, etc, digits until the handful is in numerical sequence.



In sequence sorting it is very important that all cards drop in the same relative position to one another that they held in the batch. So, make sure all cards have dropped after each sort. If a card falls out of its proper sequence put it aside and put it in its proper place after the sort is completed.

If you're interrupted while sequence sorting, it's easy to find your place again. Look for the longest clear groove in the rear of the batch. That was the last position sorted. When you start again, start at the next position to the left of this clear groove.

5.04 ***Breakdown Sorting*** — Use breakdown sorting to subdivide a large quantity of cards into convenient handfuls for sequence sorting.

To show this type of sorting we'll use an example. Let's assume you have a stack of cards numbered from 1 through 999. You want to sort them into numerical sequence. The numbers on the cards are all mixed up. Before you can sequence sort this many cards you must break them down into smaller batches of convenient handfuls.

Breaking Down the Hundreds Field

(1) Stack the cards to be sorted on the right side of the table. Take a large handful of cards — usually about twice as many as you can easily handle in sequence sorting. Of course, the number you select will depend on the size and weight of the cards. When you breakdown sort always start sorting in the farthest position to the left of the classification you want to sort.

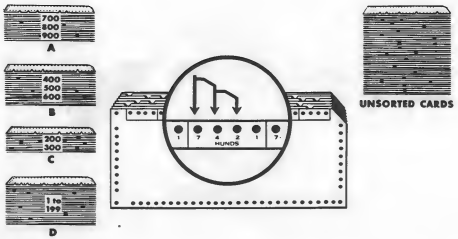
(2) Insert the sorting needle in the 7 position of the hundreds field and follow the basic technique. All 7XX, 8XX and 9XX cards will drop. Place these cards in stack A.

(3) Sort the balance of the handful in the 4 position of the hundreds field. All 4XX, 5XX and 6XX cards will drop. Place these cards in stack B.

(4) Sort the balance of the handful in the 2 position of the hundreds field. All 2XX and 3XX cards will drop. Place these cards in stack C.

(5) Place the remaining cards (numbered 1 through 199) in stack D.

(6) Continue to sort large handfuls of cards in the hundreds field until all the cards are arranged in 4 stacks.



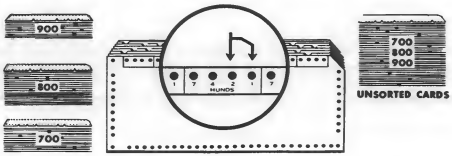
Breaking Down the 7XX, 8XX and 9XX Stack

(1) Take a handful of cards from the 7XX, 8XX and 9XX stack.

(2) Sort in the 2 position of the hundreds field. All 9XX cards will drop. Place these in a stack.

(3) Sort the balance of the handful in the 1 position of the hundreds field. All 8XX cards will drop. Place these in a stack.

(4) Place the remaining 7XX cards in another stack. Continue to sort large handfuls of cards from the 7XX, 8XX and 9XX stack until they are all arranged in the 3 stacks.

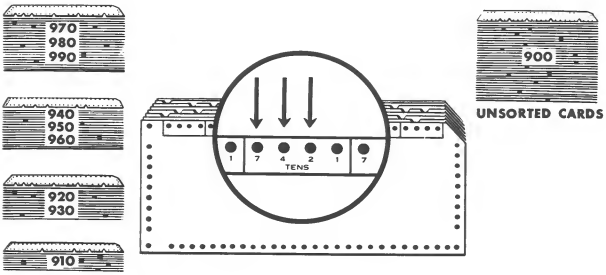


Breaking Down the 9XX Stack

(1) Take a handful of cards from the 9XX stack and sort in the 7 position of the tens field. All 97X — 98X — 99X cards will drop. Put these in a stack.

(2) Sort in the 4 position of the tens field. All 96X — 95X — 94X cards will drop.

(3) Continue this sort until you have 4 stacks.

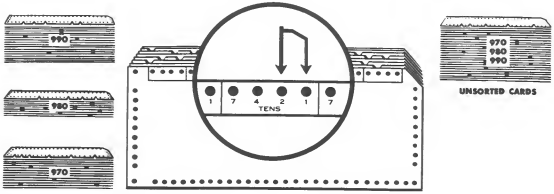


Breaking Down the 97X — 98X — 99X Stack

(1) Take a handful of cards from the 97X — 98X — 99X stack. Sort in the 2 position of the tens field. All 99X cards will drop. Place these in a stack.

(2) Sort the balance of the handful in the 1 position. All 98X cards will drop. Place these in a stack.

(3) Place the remaining 97X cards in a stack.



To break down the remaining stacks (4XX, 5XX, etc), use the same principle. For instance, to break down the 4XX, 5XX and 6XX stack, sort in the 1 position of the stack. All 5XX cards will fall, and so on. This same idea can be used for the rest of the stacks. When these stacks are small enough to handle you can start sequence sorting.

In breakdown sorting two rules are extremely important.

(a) Always sort each new handful of cards in the same positions as the previous handful.

(b) Whenever possible combine small stacks to make a convenient handful for sequence sorting.

5.05 ***Multiple Classification Sorting*** — Many times you may want to sort by major and minor classifications. For instance, you may want to sort by Central Office first for the major classification. Then you want to sort by class of report (customer, employee, etc). And then you want to sort by type of trouble found on these reports (dirt, adjustment, etc).

Before you start to sort, decide what you want for major and minor classification. Like this —

Major Class — Central Office
1st Minor Class — Type of report
2nd Minor Class — Type of found trouble

Start breakdown sorting with the major classification and work toward the lowest minor classification. Breakdown sort until you have convenient handfuls of cards for sequence sorting. Now start sequence sorting the lowest minor classification starting with the 1 of the units field. Sort from right to left until all positions and fields of this classification are sorted. Now sequence sort the next higher minor classification. Sort all positions and field of this classification. Follow this sequence of sorting until all stacks are sorted.

5.06 ***Selective Sorting*** — Use selective sorting when you want to select all cards with a certain number. You sort by eliminating unwanted cards. For example, you want to pull out all cards numbered 763 from a batch of cards numbered 1 through 999 [numerical coded, Par. 2.02(b)]. By the numbers again —

(1) Sort the 7 position of the hundreds field. Discard the cards left on the needle (those numbered from 1-699).

(2) Sort the 2 position of the remaining batch and discard the cards that fall (those numbered from 900-999).

(3) Sort the 1 position and discard the cards that fall (those numbered from 800-899). The cards remaining will be the 700 cards.

(4) Next, sort the 4 position of the tens field and discard the cards left on the needle.

(5) Sort the 2 position of the tens field and discard the cards left on the needle. The cards remaining will be numbered 760 to 769.

(6) Now, sort the 2 position of the units field and discard the cards left on the needle.

(7) Sort in the 1 position of the units field and again discard the cards left on the needle. The remaining cards will be those numbered 763.

5.07 If the cards are selective coded [Par. 2.02(c)] this operation is easier. Make your sorts through the holes that represent your number. For example (763 again — 2 out of 5 code), sort the 1 and 2 position of the units field, the 2 and 4 position of the tens field and the 0 and 7 position of the hundreds field. The cards that drop are the ones you want.

6. SPECIAL EQUIPMENT AND SERVICES

6.01 We've covered the tools and procedures you'll need for most edge sorting applications. But you may need more than this for special purposes or when you're dealing in large quantities of cards.

6.02 For instance, you may have a great many cards you want punched in the same code position. There are machines that will notch them ***all*** in one operation. They are called groovers. There are different sizes of groovers, some are hand operated and some are electric operated.

6.03 For faster punching of individual cards there are key punch machines available. They have keyboards very much like an adding machine. You insert the card, punch the keys, press a button and all the positions you want to punch are punched simultaneously. There are hand powered and electric powered key punches, too.

6.04 You may want to separate all the cards with certain similar information punched in them. If you use a single needle you have to make several sorts of each stack to get the cards you want. If you have a lot of cards to sort through, this can take a lot of time. There are units available for this type of selective sorting. It is a frame that can hold several sorting needles. These needles are clamped in the frame in the proper position — the cards are placed on the needles — and the cards you want fall away from the stack.

6.05 There are several other special tools and machines available from the manufacturers. There are special needles that can be supported from both ends for sorting large heavy cards, 7-1/2" x 8-1/2" or larger. And there are machines that punch and print a card from a master metal plate, when you want to print and punch the same information repeatedly. They even have tabulating machines that punch holes in the body of the cards and then add the information on the cards to give you a total.

6.06 You can usually rent or buy these machines from the manufacturers that make the cards. If your particular application of edge sorted cards is one that requires these special machines, you may want to contact their representative in your territory. They are usually listed under "Accounting Systems" or "Business Systems" in the "Yellow Pages" of the telephone directory.

6.07 If you decide to use edge sorted cards for an application of your own, the manufacturers can again help you. Their representative can help you lay out the card for maximum efficiency and show you how to best apply edge sort methods to your job. Most edge sort card manufacturers give this service.

6.08 And if you have a problem in the proper use of tools, machines or techniques, the manufacturer usually has a training group that can help you get started on the right track, no charge. If you need these special tools and services they are available.